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PATENT COOPERATION TREATY

PCT/FR2003/003860  


PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference BLOcp263/87P	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/FR2003/003860	International filing date (day/month/year) 22 décembre 2003 (22.12.2003)	Priority date (day/month/year) 23 décembre 2002 (23.12.2002)
International Patent Classification (IPC) or national classification and IPC C12N 15/62, 15/12, C07K 14/705, G01N 33/68, C12Q 1/68, C07K 16/28, A01K 67/027, C12N 5/10		
Applicant COMMISSARIAT A L'ENERGIE ATOMIQUE		

<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>5</u> sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of <u>6</u> sheets.</p>	
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the report</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p>	

Date of submission of the demand 12 juillet 2004 (12.07.2004)	Date of completion of this report 17 March 2005 (17.03.2005)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/FR2003/003860

## I. Basis of the report

### 1. With regard to the elements of the international application:\*

- ☒ the international application as originally filed
- ☐ the description:  
 pages \_\_\_\_\_ 1-26 \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☒ the claims:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, as amended (together with any statement under Article 19  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_ 1-33 \_\_\_\_\_, filed with the letter of 12 November 2004 (12.11.2004)
- ☒ the drawings:  
 pages \_\_\_\_\_ 1/13-3/13 \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☒ the sequence listing part of the description:  
 pages \_\_\_\_\_ 1-11 \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.  
 These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:
- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

### 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☒ contained in the international application in written form.
- ☒ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

### 4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/fig \_\_\_\_\_

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/FR 03/03860

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement**

Novelty (N)	Claims	1-33	YES
	Claims		NO
Inventive step (IS)	Claims	1-33	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-33	YES
	Claims		NO

**2. Citations and explanations**

Reference is made to the following document:

**D1:** DE WAARD MICHEL ET AL: "Properties of the alpha-1-beta Anchoring Site in Voltage-dependent Ca-2+ Channels" JOURNAL OF BIOLOGICAL CHEMISTRY, AMERICAN SOCIETY OF BIOLOGICAL CHEMISTS, BALTIMORE, MD, US, vol. 270, no. 20, 19 May 1995 (1995-05-19), pages 12056-12064, XP002198860  
ISSN: 0021-9258

1. The present international application relates to a chimeric protein derived from a high-threshold calcium channel, characterised in that it includes at least one beta subunit or a fragment thereof including at least the domain referred to as BID (beta interaction domain, see page 3 of the description), fused at the NH<sub>2</sub> or COOH end with the I-II loop of an  $\alpha_1$  subunit or a fragment thereof including at least the domain referred to as AID.

1.1 The subject matter of claims 1 to 33 is novel over the documents cited in the international search report (PCT Article 33(2)).

- 1.2 Claims 1 to 33 also comply, as such, with the requirements of inventive step of the PCT (PCT Article 33(3)).

D1, which is considered to be the prior art closest to claim 1, describes a chimeric protein including the  $\alpha_1$  interaction domain (AID<sub>A</sub>) of a high-threshold calcium channel fused with protein glutathione S transferase.

It follows that the subject matter of claim 1 differs from D1 in that the chimeric protein includes a beta subunit or a fragment thereof including at least the domain referred to as BID, derived from a high-threshold calcium channel.

The problem that the present invention is intended to solve can thus be considered to be that of providing tools for studying cell signalling channels dependent on G protein coupled receptors (GPCRs) and identifying compounds that modulate G protein activity.

The chimeric protein according to claim 1, which is neither described nor suggested in the prior art, solves the above-mentioned problem in a surprising manner.

The above discussion is also applicable to claims 2 to 33.